

## **ABSTRACT OF THE DISCLOSURE**

An apparatus for graphics processing unit, which includes a memory for storing pixel data in a red, green and blue (RGB) color space and a display pipeline. The display pipeline includes an RGB color space to a luminance color, blue color difference and red color difference (YCbCr) color space converter module configured to convert the pixel data from the RGB color space to the YCbCr color space. The RGB to YCbCr color space converter module generates a luminance color component (Y) of the pixel data by adding  $\frac{1}{4}$  of a red color (R) component of the pixel data to  $\frac{1}{2}$  of a green color (G) component of the pixel data and  $\frac{1}{4}$  of a blue color (B) component of the pixel data. The luminance color component (Y) of the pixel data may be determined by left shifting the green color (G) component of the pixel data by one bit, adding the result to the red color (R) component of the pixel data and the blue color (B) component of the pixel data, and right shifting the sum by two bits.